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EXAMINER

SORKIN, DAVID L

ART UNIT PAPER NUMBER

1723

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10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/874,376

Applicant(s)

BRUNET ET AL.

Examiner

David L. Sorkin

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 9, 10, 12, 13, 15, 17, 21, 27-29, 31, 38-40, 50 and 51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 11, 14, 16, 18-20, 22-26, 30, 32-37 and 41-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-51 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>Z</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of Group I and the embodiment of Fig. 6 in Paper No. 9 is acknowledged. The traversal is on the grounds that searching all the claims would not be burdensome. Applicant discloses 13 separate embodiments of a mixing structure (see Figs. 4-16). Searching all these separate embodiments would be extremely burdensome. It is especially noted that in class 366, static mixers having angled, planar deflector surfaces are classified in subclass 337, while curved deflector surfaces are classified in subclasses 338 and 339. Also, a search for the method claims would focus upon the disclosed direction of fluid flow relative to the mixing element(s), whereas a search for the claimed apparatus would focus upon the claimed structure, not intended uses such as a direction of fluid flow with respect to apparatus.

The requirement is still deemed proper and is therefore made FINAL.

2. Applicant states that claims 1-4, 8, 11, 13, 15, 19, 20, 22-26, 30, 32, 33-40 and 42-49 read on the elected embodiment. However, the examiner additionally considers that claims 14, 16, 18 and 41 read on the elected embodiment. Claim 14 requires that "the mixing element comprises a planar surface". According to the specification, in the embodiment of Fig. 6, the mixing element(s) is/are triangular, planar elements. Likewise, claim 41, recites "the at least one mixing element comprises a plane". Conversely, it is considered that claim 15, which requires a mixing element having "a curved surface" is not consistent with the embodiment of Fig. 6. The embodiment of Fig. 6 involves two (or more) separate planar surfaces and no curved surface. While

Art Unit: 1723

other embodiments, such as that of Fig. 8, include mixing elements having a curved surface, the embodiment of Fig. 6 does not. Claim 16, recites "the mixing element comprises an apex portion". The mixing element(s) of Fig. 6 clearly include an apex portion. It is unclear why applicant considered that claims 32 and 33, which also require an apex portion read on the elected embodiment, but not claim 16. Claim 18 further stipulates the apex portion is oriented to point downstream, which is also consistent with the embodiment of Fig. 6. However, claims 38-40 require apexes oriented upstream, which is not consistent with Fig. 6. In summary, the examiner considers that claims 1-4, 8, 11, 14, 16, 18-20, 22-26, 30, 32-37 and 41-49 to read on the elected embodiment. Claims 5-7, 9, 10, 12, 13, 15, 17, 21, 27-29, 31, 38-40, 50 and 51 are withdrawn from consideration as directed as non-elected.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. It is noted that the instant specification mentions references on pages 2, 3, 12, 17, 18. While some of these references have been cited in the IDS which is paper No. 7, and others have been cited by the examiner in the attached Notice of References Cited, references which have not been cited have

Art Unit: 1723

not been considered. In particular, the articles mentioned on page 12 have not been considered.

Drawings

4. The drawings are objected to because the information in Figs. 19 and 20 is not consistent with the specification. According to paragraphs 26 and 54-60 of the specification, Fig. 19 should provide data from the embodiments of Figs. 4-8 and Fig. 20 should provide data for the embodiments of Figs. 9-11; however, the bars of Fig. 19 are labeled as Figs. 2-6 and the bars of Fig. 20 are labeled as Figs. 7-9.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. Paragraph 47 of the specification is objected to because, in a discussion of Fig. 4, it states "Another way of describing the orientation of the this surface is the non-planar relation relationship of the first normal, second normal and the direction of fluid flow described above". However, it is clear from remainder of the specification and Fig. 4 itself that in the embodiment of Fig. 4 the first normal, second normal and the intended direction of fluid flow are coplanar.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1723

7. Claims 20, 25, 26 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. In claim 20, there is lack of antecedent basis for "the first plane or the second plane". It is unclear what, if any, further limitation "about the first plane or the second plane" is meant to imply.

9. In claims 25 and 26 there is lack of antecedent basis for "the first leading edge and the second leading edge". Claims 25 and 26 depend from claim 22, which only requires a first leading edge. It is unclear if the "second leading edge" is a required element of claims 25 and 26. Perhaps claims 25 and 26 should depend from claim 24, which requires both a first leading edge and a second leading edge.

10. In claim 30 there is lack of antecedent basis for "the first trailing edge and the second trailing edge". Claim 30 depend from claim 22, which only requires a first trailing edge. It is unclear if the "second trailing edge" is a required element of claim 30. Perhaps claim 30 should depend from claim 24, which requires both a first trailing edge and a second trailing edge.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1723

12. Claims 1-4, 8, 11, 14, 16, 18-20, 22-26, 30, 32-37 and 41-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Kao (US 4,258,782). Initially, it is noted regarding claim 1, that the only positively recited structural element is a "mixing element". The "surface" mentioned in the claim is not a surface of the mixing element, but instead is a surface of an unclaimed element which is intended to be downstream of the mixing element in an intended operation. While the claim discusses the intention that the claimed device be used in conjunction with "a fluid having a direction of flow"; "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art" *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also, "[e]xpressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim" *Ex parte Thilbault*, 164 USPQ 666,667 (Bd. App. 1969) and "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims" *In re Otto* 136 USPQ 458, 459 (CCPA 1963). Furthermore, "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself" *In re Casey* 152 USPQ 235 (CCPA 1967). Regarding claim 1, Kao ('782) discloses a fluid mixing device comprising at least one mixing element (16). Claim 1 fails to positively recite any further structural limitation, but discusses how the claimed device is intended to be used. The device of Kao ('782) would be capable of being used in the manner discussed in claim. Kao ('782) indicates an intended direction of fluid flow with "arrows 12". The mixing element would be capable of creating a vortex adjacent a surface

Art Unit: 1723

downstream thereof (such as a surface of "inner cylinder 13"). As explained in col. 1, line 45 to col. 2 line 2, the generally planar fins (16) are angled downstream and have a edge along a helical path with respect to cylinder (13). From this information, and as seen in Fig. 1, a first normal at a centroid of the mixing element (16) intersects a normal to the surface of cylinder (13) at the centroid, and the first and second normal and the direction of fluid flow are in non-planar relationship. Claims 2-4, 8 and 11 fail to further structurally limit the claimed apparatus because these claims only discuss a surface which is not part of the claimed apparatus. Regarding claims 14 and 41, the mixing element comprises a planar surface (see Fig. 4; col. 2, lines 18-20). Regarding claim 16, the mixing element has an apex portion (see Fig. 4). Regarding claim 18, while it is considered that the intended direction of flow is a matter of intended use, not structure, the apex portion of Kao ('782) is oriented downstream (see col. 1, lines 66-67; Figs. 1 and 4). Regarding claim 19, the device includes first and second mixing element (16) (see Fig. 1). While it is unclear what is being claimed in claim 20, as discussed above with regard to section 112, the first and second elements are mirror images of each other about a plane (the plane being normal to the helical path of the edges of the elements 16, at a point between the two elements). Regarding claim 22, the first mixing element comprises a first leading edge (at 15) and a first trailing edge (25 and/or 27) (see Figs. 1 and 4). Regarding claim 23, the second mixing element comprises a second leading edge and a second trailing edge (see Figs. 1 and 4). Regarding claim 24, the first mixing element comprises a first leading edge and a first trailing edge and the second mixing element comprises a second leading edge and a second trailing

Art Unit: 1723

edge (see Fig. 1 and 4). Regarding claim 25, at least one of the first leading edge and the second leading edge comprise a substantially straight edge (see Figs. 1 and 4).

Regarding claim 26, both the first leading edge and the second leading edge comprise a substantially straight edge (see Figs. 1 and 4). Regarding claim 30, the first trailing edge and the second trailing edge are in spaced relation to define an opening (see Fig.

1). Regarding claim 32, the first mixing element comprises a first apex portion (see Figs. 1 and 4). Regarding claim 33, the second mixing element comprises a second apex portion (see Figs. 1 and 4). Regarding claim 34, the first mixing element comprises a first apex portion and the second mixing element comprises a second apex portion (see Figs. 1 and 4). Regarding claim 35, the first apex portion is oriented downstream (see col. 1, lines 66-67; Figs. 1 and 4). Regarding claim 36, the second apex portion is oriented downstream (see col. 1, lines 66-67; Figs. 1 and 4). Regarding claim 37, the first apex portion and the second apex portion are oriented downstream (see col. 1, lines 66-67; Figs. 1 and 4). Regarding claim 42, the mixing element comprises a wedge (see Figs. 4 and 5). Regarding claim 43, Kao ('782) discloses a fluid mixing device comprising at least one mixing element (16) for mixing a flow of fluid having a direction of fluid flow (12), the at least one mixing element (16) comprising a surface having a first normal which is angled acutely with respect to a first plane having a second normal substantially perpendicular to the direction of fluid flow; and acutely angled with respect to a second plane parallel to the direction of fluid flow and orthogonal to the first plane (see col. 1 line 45 to col. 2 line 2; Figs. 1 and 4). Regarding claim 44, Kao ('782) discloses a fluid mixing device comprising at least one mixing

Art Unit: 1723

element (16) for mixing a flow of fluid having a direction of fluid flow (12), the at least one mixing element (16) comprising a surface having a normal which is acutely angled with respect to each of two planes which are orthogonal to one another, each plane intersecting on a line substantially parallel to the direction of fluid flow (see col. 1 line 45 to col. 2 line 2; Figs. 1 and 4). Regarding claim 45, Kao ('782) discloses a fluid mixing device comprising at least one mixing element (16) for mixing a flow of fluid having a direction of fluid flow (12), the at least one mixing element (16) comprising a surface having a normal which is acutely angled with respect to a first plane and a second plane which is orthogonal to the first plane, the first plane and the second plane intersecting on a line substantially parallel to the direction of fluid flow (see col. 1 line 45 to col. 2 line 2; Figs. 1 and 4). Regarding claim 46, it first must be noted that the "surface" discussed in the claim is not a surface of any positively recited element of the claim. That having been said, Kao ('782) discloses a fluid mixing device for mixing a fluid having a direction of fluid flow (12), the device comprising at least one mixing element (16). The mixing element would be capable of creating a vortex adjacent a surface downstream thereof (such as a surface of "inner cylinder 13"). The mixing element (16) is oriented in a manner such that a single rotation around its nearest edge (at 15) to the surface of 13 causes the mixing element to become parallel to a tangent to the surface of 13 nearest to the mixing element, describing an axis of rotation that is oblique with respect to the direction of fluid flow (see col. 1 line 45 to col. 2 line 2; Figs. 1 and 4). Regarding claim 47, Kao ('782) discloses a radiation source module (10) comprising the fluid mixing device discussed above with regard to claim 1. Kao ('782) is considered to disclose a

Art Unit: 1723

radiation source module because of the disclosure of "heat exchange device 10" (col. 1, line 39). It is considered that heat exchanger involves radiation of heat through electromagnetic radiation (see "Physics for Scientist and Engineers" pages 522 and 523, section 17-4). Regarding claim 48, Kao ('782) discloses a fluid treatment system (10) comprising the fluid mixing device discussed above with regard to claim 1. Regarding claim 49, Kao ('782) discloses a fluid radiation treatment system (10) comprising the fluid mixing device discussed above with regard to claim 1. Kao ('782) is considered to disclose a radiation treatment system because of the disclosure of "heat exchange device 10" (col. 1, line 39). It is considered that heat exchanger involves radiation of heat through electromagnetic radiation (see "Physics for Scientist and Engineers" pages 522 and 523, section 17-4).

Conclusion

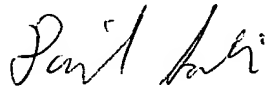
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Art Unit: 1723

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in cursive script, appearing to read "David Sorkin".

David Sorkin

July 16, 2003